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MEDICAL NEWS LETTER

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PREVENTIVE MEDICINE SECTION

Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Notice

Due to the critical shortage of medical officers, the Chief, Bureau of Medicine and Surgery, has recommended, and the Chief of Naval Personnel has concurred, that Reserve medical officers now on active duty who desire to submit requests for extension of their active duty for a period of three months or more will be given favorable consideration.

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Residency Training Policy for Reserve Medical Officers on Active Duty

A forthcoming BuMed instruction will prescribe the Department of Defense policy with respect to residency training programs for medical officers of the Regular Navy and U. S. Naval Reserve.

1. In addition to medical officers of the Regular Navy, Reserve medical officers who are on active duty, and who have completed their obligations for active duty imposed by the Universal Military Training and Service Act, as amended, are now eligible to compete for assignment to residency training in naval hospitals, in those specialties in which there exists a definite shortage at the time of application for such training.

2. At the present time shortages exist in the residency training program in the following specialties: Anesthesiology, Otolaryngology, Ophthalmology, Pathology, Orthopedics, Obstetrics and Gynecology, Pediatrics, and Urology.

3. Eligible and interested Reserve medical officers should make application to the Bureau of Medicine and Surgery, via the chain of command. Letters of application should contain an agreement to volunteer for

the period of residency training requested, and to remain on active duty in the Navy for a period of 1 year following completion of the training, for each year of training received. In general, the Bureau prefers to approve officers for residency training on a year-to-year basis.

4. From time to time the list of medical specialties in which shortages exist will be revised and brought up to date, to reflect the then existing needs. (ProfDiv, BuMed)

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Fracture of the Carpal Navicular Bone

Fracture of the carpal navicular (scaphoid) remains an essentially unsolved problem. The accepted treatment has been immobilization in a snug circular plaster dressing from just below the elbow to the metacarpal necks until the fracture is soundly united or irreversibly ununited.

The practical disadvantages of this treatment are obvious and may be small or great, depending upon the duration of the immobilization and the patient's occupation. Reassurance that the majority of carpal navicular fractures unite, if immobilized adequately for a sufficiently long period, is small comfort to the breadwinner who cannot do his job in a plaster gauntlet.

Open reduction and internal fixation was carried out in 19 fractures of the carpal navicular over a 9-year period. This report is not intended as an advocacy of this method but rather as a commentary on some of the clinical observations, problems, complications, and results attendant upon this experience.

The morbidity was low; the average hospital stay was less than 6 days. A comfortable and useful hand usually was regained within a week after operation. Except in 2 instances where the security of the fixation was debatable, all external splints were discarded after a few days. The patients were encouraged to resume hand function and to return to their jobs as soon as symptoms permitted.

Five patients with ununited fractures received late internal fixation. All had remained untreated prior to operation. In each, the ununited fracture constituted a major disability, sufficient to prevent work. The rapidity of return to regular work following operative fixation and the ease and comfort with which all of these patients have continued to carry out their normal duties have been surprising, especially because, to date, none have shown any definite evidence of bone healing. It seems improbable at this late date that bony union will ever occur. However, sclerosis has not progressed at the edges of the ununited fracture, but, on the contrary, it has consistently regressed with time and use.

One of these 5 cases presented 2 points of interest. Operative inspection revealed a large cyst lined with vascular granulation tissues which had

excavated each fragment about equally. The internal fixation was secure but faulty, in that the screw engaged the capitate bone, thus blocking mid-carpal motion. Six months after operation, wrist extension, without pain, remained blocked to 190 degrees; other motions were unimpaired. In addition, over the same period, the cystic cavitation of both fragments continued to regress on each side of the fracture coincidentally with a progressive avascular necrosis of the proximal fragment. The eventual fate of this lesion is not yet established, but it is interesting to speculate upon the source and vascular supply of the new bone obliterating the cystic cavity in the proximal fragment which, by all roentgenographic criteria, is avascular.

Five patients with stable fractures were treated by early internal fixation. The technical problems of fixation were simple, and a rapid resumption of normal activities was the rule. As might be anticipated from the nature of the lesion encountered, uneventful bony union occurred in all cases.

Nine patients with unstable fractures received early internal fixation. Two of these cases are too recent for evaluation. In 7 patients, the post-operative clinical course was as satisfactory as it was for the patients with the stable fractures. Bony union was the rule, but it seemed markedly delayed as compared to the rate of healing in stable lesions. One of these lesions was characterized by a temporary sclerosis of the proximal fragment, as seen in roentgenograms. Union occurred without necrosis, but the sclerosis, which reached a peak about 6 months after operation, did not subside completely for almost 3 years. (J. Bone & Joint Surg., July 1954, H. L. McLaughlin, M. D.: Presbyterian-New York Orthopaedic Hospitals, New York, N. Y.)

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Treatment of Compound Fractures

The treatment of an open fracture is a responsibility which cannot be avoided by the physician practicing in a rural area. Any hour may bring a tragedy on the highway or nearby farm. Accompanying the rise in the number of fatal highway and farm accidents is a corresponding increase in the number of maimed and disabled. Although it may be difficult to reduce the death rate in these accidents, it should be possible to improve the lot of the seriously injured by effective initial care designed to prevent infection and to preserve function.

The patient is usually seen for the first time in the emergency room of the hospital. At this time a rapid, but thorough, examination of the patient is essential. Multiple injuries are the rule rather than the exception. Chest and intra-abdominal injuries commonly accompany severe injuries to the extremities. The over-all picture of the patient's condition gained by this initial survey provides a base line for evaluating changes in his condition during the next few days. Repeated observations of the patient's condition during the period are of vital importance.

Shock always accompanies fractures of the major bones. It is more severe in cases with open fractures. Shock in these patients is rarely due to blood loss or local fluid loss. It is caused by the presence of the unreduced fracture. Therefore, although it is important to support the patient by the infusion of blood or plasma expanders, the proper care of the fracture is the essential element in minimizing the shock produced by the injury.

Debridement, or the primary excision of the wound, is the most important phase of the treatment of an open fracture. Here, the specter of infection can be laid at rest, primary healing of the fracture assured, and a maximum of function preserved.

Debridement has two objectives: (1) the removal of all foreign material contaminating the wound, and (2) the removal of all nonviable tissue or tissue badly damaged by the injury. Its primary purpose is to prevent infection by removing a large portion of the contaminating bacteria and by removing all of the damaged tissue which provides the milieu for bacterial growth. When these conditions have been achieved, the physiologic response of the body to injury and infection can operate effectively.

Internal fixation. --If a satisfactory reduction and immobilization of the fracture by conservative means such as traction or a plaster dressing can be obtained, internal fixation in open fracture should be avoided. If internal fixation is required, it should be as simple as possible. The wire suture, the transfixion screw, the Kirschner wire, the intramedullary pin should be used in preference to more complex types of internal fixation.

Wound closure (primary or secondary?). --Here is another point where the judgment of the physician is put to the test. In most instances it is a matter of deciding each case upon its merits without depending upon a fixed rule. The location and severity of the injury, the time elapsed before treatment, the amount and type of contamination all affect the decision to close the wound primarily or to pack the wound open. In most cases the course to take will be obvious. In doubtful cases discretion is probably the better part of valor.

Splinting. --Almost any technique for splinting the fracture may be used postoperatively provided that immobilization in a position of reduction is maintained. Plaster or aluminum splints may be used, as well as skeletal traction. Effective immobilization is as important for the healing of the soft parts as for the healing of the fracture. Immobilization and elevation, with preservation of the normal circulation in the extremity, is of great value in localizing and minimizing infection should it occur.

Of the antibiotics, a combination of penicillin and streptomycin is the most useful in the prophylaxis of infection. They should be continued until the wound has healed solidly. It is otherwise unwise to administer a variety of antibiotics simultaneously in the hope of scuttling infection with a broadside of fungal derivatives. Should an infection become established and persist, a culture of the wound and a sensitivity test should be used to determine the most effective antibiotic to be used.

Some specific measures to prevent tetanus should be a part of the treatment of every open fracture.

Gas gangrene develops in dead muscle. It is most common in patients with vascular injuries with large masses of ischemic muscle. Proper debridement usually prevents gas-gangrene bacilli from obtaining a foothold. Early amputation or reoperation, with excision of nonviable muscle masses, may be necessary in cases of fracture complicated by vascular injury. Gas gangrene antiserum should not be used prophylactically as a substitute for adequate debridement. It should only be used in the treatment of an established infection. (GP, July 1954, L. F. Peltier, M. D. ; The Medical School, University of Minnesota, Minneapolis, Minn.)

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Major Surgery in Coronary Artery Disease

The risk of surgery in patients with coronary artery disease is a problem of growing importance to both the internist and surgeon. The prevalence of coronary artery disease is increasing not only because of the aging population but also because the life expectancy of the patient with angina pectoris or myocardial infarction would seem to be greater than it was 10 or 15 years ago. Consequently increasing numbers of patients with coronary artery disease are presenting themselves as candidates for surgery.

This article summarizes the morbidity and mortality observations in 32 patients undergoing 51 major operations in this hospital during a 3-year period.

The authors' observations, in agreement with other recent studies, seem to indicate that the patient with coronary artery disease does not pose as forbidding a surgical problem as was previously thought. In 1939, Brumm and Willius reported 4.3% cardiac deaths among a group of 257 coronary patients undergoing major operations. Morrison, in evaluating this problem in patients operated upon at the New York Hospital from 1933 to 1943, found a mortality rate of 8.6% in 58 operations on patients with angina pectoris, and a mortality rate of 8.1% in 37 operations on patients with myocardial infarction. These figures, although higher than those of Brumm and Willius, included all deaths, whether they were related to the underlying cardiac disease or not. In 1951, Hannigan and associates, at Memorial Hospital in New York City, analyzed the records of 58 patients with healed myocardial infarction who underwent major surgical procedures and found a mortality rate of 6.3% in 79 operations in subjects with angina pectoris and 7.2% in 125 operations in subjects with myocardial infarction.

It is agreed generally that 3 to 6 months should elapse following acute myocardial infarction to permit optimal repair of the heart muscle prior to operation. In 2 of the fatal cases in the authors' infarction group the post-

mortem evidence was consistent with fresh infarction, a fact prejudicial to the operative recovery of these patients and emphasizing the need for careful preoperative screening of patients to exclude recent coronary occlusion.

In reviewing this material, it was apparent that the average age of the patients was considerably higher than that of the general hospital population. Also, in many instances the indications for surgery were mandatory and relatively few of the operative procedures were elective in nature. All of these factors would contribute to a higher mortality in comparison with the noncoronary group.

It is noteworthy that despite the fact that the majority of these patients were poor surgical risks there were no complications during the operations that could be attributed to the heart disease, a tribute to current operative methods and anesthesiology. It is apparent that cooperation of the internist, surgeon, and anesthetist was essential in the preparation of the patient for surgery and in the management of the operative and postoperative periods. (Am. J. M. Sc., June 1954, R. P. Lochhead, M. D., C. S. Coakley, M. D., and J. M. Evans, M. D.; The George Washington University Medical School, Washington, D. C.)

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Missile Wounds in Malaya

Missile wounds in 774 casualties sustained during a 3-year period in Malaya are reviewed. The mortality among cases alive on admission to the hospital was 5.5% and among cases fit for surgery, 3.7%.

Although the number of wounds in this series was comparatively small--in fact, too small for most individual surgeons to attain experience and skill comparable to that developed by surgeons during the late world war--this has in part been compensated for by devoting more time to individual cases and by being able to follow them personally. Although experience in Malaya has confirmed the soundness of the principles of wound surgery developed during the second world war, there have been certain developments since which are of importance. These are:

(1) Under present conditions in Malaya, with penicillin available in sufficient dosage and supplemented if necessary by the newer antibiotics, wound infection can be so greatly retarded as to make the time element, from this aspect, no longer important. Under favorable conditions serious wound infection should be almost eliminated.

(2) Some wounds are, of course, lethal, killing either immediately or very soon after wounding. There is little that can be done about these except to try to reduce their incidence by good battle training and possibly by some form of protection such as the laminated nylon vest. The great majority of deaths from wounds, not of themselves necessarily lethal, occur directly or indirectly from hemorrhage. This must be regarded as a preventable con-

dition, and efforts to reduce mortality from missile wounds can be directed with much profit along these lines. The three main life-saving procedures in such cases are adequate first aid to limit bleeding from accessible sites; quick adequate blood replacement for cases with oligemic shock, actual or imminent; and speedy evacuation to a surgical center of any case with inaccessible bleeding. There is nothing new about these fundamental principles, nevertheless, many of the deaths in the series under review were due either to failure or to inability to apply them. They cannot be restated too often.

(3) Helicopter evacuation has come to stay. It will not always be available, because it is unlikely that local air superiority essential for the operations of these vulnerable aircraft will always be present. When they can be used, however, they are life-saving and should be the normal method by which penetrating wounds of the head, spine, chest, and abdomen, maxillofacial wounds, and those involving the femur or major vessels are evacuated. Apart from the time saved and the minimization of shock while in transit, they have the tremendous advantage that, once airborne, they can cover considerable distances quickly and so enable serious cases to be operated quickly where adequate surgical and nursing facilities can be provided and the need for subsequent speedy evacuation is less urgent. (Brit. M. J., July 3, 1954, Tavistock Square, London, W. C. 1, England; Col. A. J. Clyne, A. M. S.)

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Evaluation of Dermatomes

The standard skin-cutting instruments have been utilized by the members of the Burn Study Section of the Surgical Research Unit, and a review of some of the advantages and disadvantages is presented in order that surgeons who are inexperienced in the skin grafting of burns may be aided in their selection of an appropriate instrument. This report is not meant to be either authoritative or final, but is merely a presentation of the point of view of a group of surgeons who have had extensive experience in skin grafting severely burned patients.

The most important part of any skin-cutting instrument is the cutting edge of the blade. Regardless of the skill of the surgeon and the cost or the construction of the instrument used, a good skin graft cannot be cut with a dull or nicked blade. Theoretically, skin graft blades are sharp and ready to be used for cutting when they arrive from the manufacturer; however, this is not always true, and it is advisable to hone the blade by hand before it is used, and to recheck and rehone it carefully before each subsequent use. Most instruments, including those with throw-away blades, are supplied with a blade holder that can be used to hold it at a proper angle for honing and maintaining the bevel of the cutting edge.

The use of the freehand knife was the earliest method of obtaining split-thickness skin grafts and it is probably the most universally available instrument in use today. The straight-edged razor was the first type of freehand knife available and is still widely used for cutting small, narrow grafts. The blade is approximately 3 inches in length, and, thereby, limits the breadth of the cut. The Blair-Brown and Ferris Smith knives have largely replaced the straight-edged razor. The blades in these instruments are approximately 5 to 6 inches in length, and greatly increase the amount of skin that can be cut at one time. In both of these knives, the blades are removable and a new, sharp one can be substituted for a dull, nicked one.

The use of a Padgett-Hood dermatome is the most common method of cutting split-thickness skin grafts. The machine was developed by Padgett in the late thirties but, since that time, has been modified by Hood. It is an ingenious device for cutting skin and permits the beginner to take a specified length of skin of uniform depth and width. It is disadvantageous in that it will cut only a 10 by 20 cm. piece of skin. For those who prefer longer skin grafts, for use over the entire length of a leg, for example, a different method of cutting skin must be used. The Padgett dermatome is available in most hospitals and the technique of using it certainly should be mastered by all surgeons.

The Reese dermatome is essentially a modification of the Padgett dermatome. In basic design, the instruments are identical; however, the Reese dermatome is a much heavier instrument and much more solidly built. This is advantageous in that it helps the surgeon hold the instrument steady while he is cutting the skin. On the other hand, it also tends to tire the operator much more readily than does the Padgett dermatome. The method of regulating the depth of cut has been modified on the Reese dermatome.

The Brown electric dermatome is a rather recent innovation in the field of skin-cutting instruments. The blade, driven by an eccentric, makes very short oscillations. This eccentric is driven by means of a flexible shaft which passes through the handle of the instrument and is connected to an electric motor outside the sterile field.

Of all the instruments described, the Brown electric dermatome is perhaps the easiest for the beginner to use and the one with which he will have the least difficulty. It is almost impossible to cut too deeply with the instrument unless the blade setting has been ignored. The Brown electric dermatome has a maximum cutting width of 3 inches, and this is perhaps the greatest disadvantage.

The Stryker electric dermatome is a new instrument for cutting skin grafts. The dermatome part of this machine is actually an accessory which has been designed to fit the Stryker electric bone saw and cast cutter, and this gives it the unique advantage of serving a dual purpose.

In 1948, Dr. Donald E. Barker developed the Vacutome, an instrument utilizing the principle of a suction cut with a knife attached for cutting skin. In the Vacutome, a standard Ferris Smith replaceable skin-graft blade is

used. The advantages and disadvantages of each instrument are discussed with no attempt being made to prove the superiority of one instrument over another. (Surgery, July 1954, Capt. J. H. Davis, MC, USA; University Hospitals, Cleveland, Ohio)

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Germfree Animal Technic for Study of Dental Caries

Despite widespread interest in dental caries, and the consequent accumulation of numerous well-planned experimental investigations in search of the causes of this disease, a clear understanding of its etiology and pathogenesis is definitely lacking. There is evidence, however, of many factors both systemic and local, modifying or contributory to the carious process. Study of the inter-relationships of these factors has given origin to a few attractive theories, but the validity of current theories still depends on the discovery of final proof of etiology.

The bacterial flora of the mouth, and more specifically of the carious lesion, is so complex that any potential cariogenic effects of micro-organisms are constantly subject to modifying influences arising from the simultaneous action of some or all of the numerous species and varieties commonly present in this localized area. These modifying effects could be either additive or symbiotic, they could be neutralizing, or they could be either inhibitory or antibiotic. Even if the cause of dental caries is to be found in phenomena other than those associated with the metabolic activities of the local bacterial flora (as has been claimed by a few investigators), the objective demonstration of such phenomena is made exceedingly difficult, if not impossible, by the ubiquitous nature of oral micro-organisms, some of which have the capacity, in vitro, to bring about a dissolution of tooth substance closely resembling, in some respects, certain stages in the dental caries process.

In view of the foregoing considerations, the authors began a series of investigations with animals that are initially free of all bacteria, but in whom single or multiple strains of known bacteria can be introduced.

In the last half century, several different more or less specifically identified micro-organisms have been reported to be associated with the dental caries process. Those which have received more than passing attention in this regard belong to the actinomyces, cladothrix, enterococci, lactobacilli, leptotrichia, proteuslike forms, staphylococci, and streptococci. Although indirect evidence indicates that some of these bacteria are more closely associated with carious lesions than others, it is the direct evidence in experimentally produced dental caries which must be sought in order to determine the causative microbial agent or agents of this disease. Empirical methods in caries research will be supplanted by a more rational approach to the problem once an etiological agent is irrefutably established.

In vitro tests with extracted teeth composed of nonvital and, at least in some respects, altered tissues have been conducted in tubes of pure or mixed bacterial cultures. Artificial lesions sometimes have been produced, and these have been reported to resemble dental caries to a greater or lesser degree. Such in vitro experiments, valuable as they are, do not provide the comprehensive kind of direct evidence needed, which can come only from vital teeth normally functioning within the environment of the oral cavity.

In order to provide such conditions, the authors undertook dental caries studies in animals reared from birth under such circumstances that their mouths and teeth, as well as the rest of their bodies, their food and water, and all surfaces with which they come in contact, could be maintained completely free of all living bacteria. Under these same circumstances, a pure culture of one or more species of micro-organisms may be introduced for study of their effects on the teeth in the absence of all other contaminating forms of microbial life.

The purpose of the experiment was to compare or contrast the incidence and extent of carious lesions in the molars of conventional rats with results obtained by feeding the same sterilized diet to germfree rats.

Because dental caries is, in all probability, a convergent biologic phenomenon in which there must be the coincidental occurrence of at least three conditions, the use of the germfree animal in this study permitted complete control over the most difficult factor, the ubiquitous microbial flora. Another factor, the presence of a nutritive substrate metabolized by bacteria of the oral cavity, has been within experimental control for some time. The third and most intrinsic factor, a suboptimal resistance of the tooth itself, is only incompletely understood. Tooth resistance may be concerned with the presence of trace elements incorporated in the enamel and dentin. With this point in mind, the fluoride ion content was held to a minimum in both liquid and solid components of all diets fed the animals. General tooth resistance might also involve a certain self-cleansing type of dental morphology or possibly other less tangible factors capable of assertion on a genetic basis.

Complete control of micro-organisms living in and about the experimental animal by the germfree technic made it possible in the present basic study to exclude all bacteria. It is notable that the same diet, fed to rats under normal conditions of the animal room where it produced abundant dental caries, failed to produce a single carious lesion, even on a microscopic level, in the germfree rats. Thirteen germfree rats included in this report, it is true, were born by cesarean section and hand fed a sterile, synthetic milk diet, unlike the conventional control animals which were normally born and suckled by the mother rat. Yet the mechanics of the germfree method, indispensable in the initial stages of germfree rearing, and difficult as it is on the innate ability of the young rats to survive, has not precluded the development of dental caries. The fact that the other groups of nine germfree rats born normally and rat suckled likewise showed no carious lesions

provided ample evidence to substantiate this point. Second, it was interesting to observe that among the animals reared germfree on the caries-producing diet in the study, the molars which happened to develop traumatic fractures perhaps weeks before the animals were sacrificed likewise did not show evidence of caries activity. The minimal amount of stains on the teeth probably reflects the absence of chromogenic bacteria.

It is believed that the results presented in this report establish, on an unequivocal, although experimental basis, the fact that animals entirely free of living micro-organisms do not develop dental caries, despite the ingestion of a diet which in conventional control rats initiates and promotes this disease of the teeth. Findings made in this base-line study were not unexpected. Suggestive evidence had been accumulated earlier. For instance, it has been repeatedly shown that a consistent effort at mechanical removal of bacteria and their substrate from around the teeth as practiced in rigorous oral hygiene can minimize the incidence of dental caries. Furthermore, it has been demonstrated more recently that the use of a dentifrice containing the antibiotic, penicillin, which is growth-inhibitory to certain bacteria, can markedly reduce caries in both experimental animals and in school children. Also of similar import is the fact that there has never been reported a case of true caries in unerupted teeth, even when they have remained impacted in their germfree osseous crypts for years; while in the same individual, similar teeth exposed to a noxious environment in the oral cavity have decayed.

The major contribution of the experiments reported in this study is the demonstration, through the use of animals free of all microbes, that dental caries cannot occur in the absence of such microbes. Only in this limited sense might it be hoped that these findings may, in retrospect, constitute a new milestone in caries research. Because the conventional microbe-contaminated animals when fed exactly the same diet did develop the disease, it is logical to assume, although it has not been demonstrated in these particular experiments, that the disease, when it occurs, is the result of bacterial action. Thus, with the conclusive negative experimental data now made available, it must be assumed that dental caries is a disease truly caused by micro-organisms. (J. Dent. Research, Apr. 1954, F. J. Orland, J. R. Blayney, and R. W. Harrison; University of Chicago, Chicago, Ill.; and J. A. Reyniers, P. C. Trexler, M. Wagner, H. A. Gordon, and T. D. Luckey; University of Notre Dame, Notre Dame, Ind.)

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Multiple Transfusions for Sickle Cell Anemia

The remarkable increase in the knowledge of the pathologic physiology of sickle cell anemia in recent years has suggested that multiple blood transfusions might act as exchange transfusions in the treatment of this disease. For this reason it was decided to study the hematologic

effects of multiple transfusions in a group of patients with sickle cell anemia. The results of this study are reported.

The patients with sickle cell anemia were hospitalized for study beginning at least 4 days prior to transfusion to obtain base-line values. Transfusions of bank blood preserved with acid-citrate-dextrose mixture then were given at intervals of 1 or 2 days until the erythrocyte count reached normal. While the patients were hospitalized, determinations of the erythrocytes, reticulocytes, sickled cells, and plasma bilirubin were made 3 times a week and, as far as possible, all stools were collected for determinations of urobilinogen. After discharge from the hospital the patients were followed at weekly intervals for varying periods.

In the present study the earliest noticeable effect of multiple transfusions was a decrease in reticulocytes which became apparent within 48 hours after the first transfusion. Although normal erythrocyte levels were not attained until 7 to 11 days after the first transfusion, the reticulocyte count reached normal within 6 to 8 days in every instance. Coincident with the fall of reticulocytes there was a prompt reduction in the number of sickle cells in the peripheral blood. In all patients this reduction was marked by the end of the first week and progressed until a time that varied between the twelfth and twenty-fifth day in different individuals. At this time a striking change had occurred in the composition of the erythrocyte population. Sickle cells had decreased from about 100% to about 5%, a change which represented a decline in absolute numbers from a range of 1.4 to 2.7 million per cu. mm. to values that ranged from 0.1 to 0.3 million per cu. mm. Plasma bilirubin levels diminished appreciably by the sixth day and reached the lowest levels within 12 to 25 days. After approximately 25 to 30 days when the erythrocytes had fallen to about 3.5 to 4.0 million per cu. mm., increases in reticulocytes, sickled erythrocytes, and plasma bilirubin became apparent.

The risk of anesthesia and surgery in sickle cell anemia has been emphasized by Campbell, Pratt-Thomas and Switzer, and Crastnopol and Stewart. Several reviews of the published reports on the association of pregnancy and sickle cell anemia have revealed a very unfavorable outlook for both mother and child. The complications most frequently observed have been vascular accidents (cerebral, pulmonary, pelvic), infections (pyelitis, pneumonia, puerperal sepsis), and heart failure. The studies of Diggs and Ching, Kimmelstiel, Harris, and others indicate that many of the clinical features of sickle cell anemia result not only from the anemia per se but also from thrombosis or ischemic infarction without thrombosis. These lesions, which may occur in almost any organ, are thought to be due to stasis and congestion in the capillaries or other parts of the vascular system that result from the distortion of the sickled erythrocytes under conditions of lowered oxygen tension.

According to these concepts of the pathologic physiology, correction of the anemia and a reduction in the number of sickled erythrocytes in the peripheral circulation might lessen the complications that have been noted

in this disease. The present study indicates that this can be accomplished within a period of 1 to 2 weeks by means of transfusions of whole blood or packed erythrocytes. Although no adverse effects were noted in the authors' patients despite the relatively large volumes of blood that were administered within a rather short period, the use of packed erythrocytes would seem more desirable, particularly during pregnancy or in the presence of heart failure. Because the effects of transfusions are temporary, an attempt to keep the level of the peripheral blood within the normal range over a period of many years may be inadvisable because of the likelihood of transfusion hemosiderosis. It is possible that with a low iron intake the risk of hemochromatosis from repeated transfusions is no greater than the risk encountered in the natural course of the disease in children who have a severe form of the disease. Observations over a period of years is necessary to determine this point. Such a study has been initiated in several children under the authors' care. (Am. J. Med., July 1954, C.C. Donegan, Jr., M.D., W. A. MacIlwaine, M.D., and B.S. Leavell, M.D.; University of Virginia, Charlottesville, Va.)

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Carcinoma Histology and Biologic Behavior

A study of 138 cases of gastric carcinoma resulted in the establishment of three major histologic types with characteristic biologic behavior; namely, mucous cell carcinoma, pylorocardiac gland cell carcinoma, and intestinal cell carcinoma.

Mucous cell carcinoma has the following features: frequent growth as signet-ring cells with mucin production or as undifferentiated cells, but uncommonly as differentiated glandular structures; significant onset before 40 years of age; primary tumor appearing as a relatively large, flat, diffusely infiltrative growth, and a high incidence of extension and metastasis.

Pylorocardiac gland cell carcinoma is characterized by the following: formation of well-differentiated glandular structures; significantly high incidence in males; onset usually after 40 years of age; localization preponderantly in antrum and cardia; primary tumor appearing usually as a delimited, fungating, sometimes widely ulcerated growth, and a diminished tendency for extension and metastasis as compared to mucous cell carcinoma.

Intestinal cell carcinoma displays the following traits: two growth patterns with interplay in some tumors or in double primary tumors, the first well differentiated glandular and the second mainly undifferentiated; a suggestively greater incidence in females than the other two types of gastric carcinoma; onset usually after 40 years of age; significant localization in the fundus; high frequency of pernicious anemia; primary tumor

appearing as a polypoid, a fungating, or a relatively flat, nodular, delimited growth, with a low propensity for extension and metastasis.

Although all three types of gastric carcinoma extend, metastasize, and kill, the approximate degree of lethality as determined both at autopsy and by survival following gastric resection is as follows: mucous cell carcinoma 98%, pylorocardiac gland cell carcinoma 75%, and intestinal cell carcinoma 60%.

A valuable adjunct to the future study of gastric carcinomas, especially the pylorocardiac gland cell and the intestinal cell types, would be the application of elastic tissue stain to determine the relationship of vein invasion to survival and to the dissemination of metastases, notably to the liver.

Less radical gastric resection is probably indicated for mucous cell carcinoma, because prognosis is so poor even with the most radical total gastrectomy technically possible.

Depending on the case, radical gastrectomy of variable totality is indicated for pylorocardiac gland cell carcinoma and intestinal cell carcinoma. In patients with signs of local recurrence at the anastomosis site following gastric resection for either of these two types of carcinoma, an attempt at secondary resection seems warranted.

The similarity of the growth patterns of pylorocardiac gland cell carcinoma and of the endometrial glands during the menstrual cycle suggests the use of hormones, such as androgens or estrogens, in treatment of recurrent or metastatic carcinoma.

Further analysis of more cases of gastric carcinoma should be made by study of histologic features and biologic behavior to confirm or refute the observations described. This analysis should include the relationship between histologic type of carcinoma and location in the stomach to extension and metastasis. (Arch. Path., July 1954, R. M. Mulligan, M. D. and R. R. Rember, M. D.; University of Colorado School of Medicine, Denver, Colo.)

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Pheochromocytoma and the Abnormal Electrocardiogram

Pheochromocytoma with surgical cure is no longer a medical rarity. Nevertheless, because this tumor is still occasionally diagnosed only on the autopsy table, there remains a constant need for appropriate clinical suspicion based upon a sound familiarity with all the characteristics of this disease.

The clinical features, the laboratory and metabolic abnormalities, and the medical and surgical management of patients with a pheochromocytoma have been extensively discussed. Several chemodiagnostic tests have been devised and the utility as well as the pitfalls of these procedures have been adequately reviewed. There has been, however, no recent emphasis of the

fact that electrocardiographic abnormalities are frequently noted in the presence of a functioning chromaffin cell tumor.

In order to direct attention to this feature of the clinical syndrome, the electrocardiographic changes encountered in 2 patients with surgically cured pheochromocytoma are presented, the pertinent literature reviewed, and the pathologic physiology of these abnormalities discussed.

It is evident from the discussion that the pathogenesis of the abnormal electrocardiogram produced by a pheochromocytoma is a complex interplay of the relative amounts of epinephrine and norepinephrine secreted by the tumor, the duration of the secretion, whether intermittent or sustained, and the net effects of these pressor amines upon the cardiac rate, rhythm, output, oxygen demand and supply, as well as the coronary circulation, pulmonary and peripheral arterial resistance, and perhaps the body electrolyte distribution.

The reported abnormalities are either arrhythmias or changes suggesting myocardial damage, ischemia, or "strain." A singularly striking feature of the latter group is the diffuse distribution of the S-T segment and T-wave changes. (Am. Heart J., July 1954, Capt. W. J. Sayer, MC, USA, M. Moser, M. D., and Col. T. W. Mattingly, MC, USA; Walter Reed Army Hospital, Washington 12, D. C.)

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Acute Infectious Lymphocytosis

In 1941, Smith described an entity called acute infectious lymphocytosis, or, as it is widely referred to in the foreign literature, Carl Smith's disease. It is a benign disease of unknown etiology, occurring ubiquitously in a sporadic and epidemic fashion. A tabulation of reported cases has resulted in the designation of 4 major groupings of the disease: (1) asymptomatic; (2) gastrointestinal (diarrhea, vomiting, and acute abdominal conditions); (3) respiratory; and (4) central nervous system (meningoencephalitic).

This article has three purposes: (1) to report a carefully observed case of acute infectious lymphocytosis; (2) to present a study of an outbreak of this clearly defined disease; and (3) to review the salient features of the disease so that it can easily be distinguished from other more serious illnesses.

Although many studies have been undertaken, no definite agent has been incriminated. Attempts to isolate bacteria or virus have been unsuccessful. Complement fixation and antibody studies have been unrewarding. Trauma has been considered. Stomatitis and herpetic eruptions have occurred in association with infectious lymphocytosis. Positive stool cultures for Giardia lamblia were noted in 4 of Dunn's cases. The author postulated that acute infectious lymphocytosis should be regarded as a reaction of a host

to a variety of agents rather than to a specific entity. However, the appearance of the condition in epidemic form seems to speak against the nonspecificity of the hematologic response and is more in keeping with an infectious origin. The possibility of ectoparasites as a causal agent has not been explored.

The predominant laboratory finding is a marked leukocytosis with an absolute lymphocytosis. The lymphocytes are considered to be normal and small and to contain the coarse chromatin masses of normal mature cells. Scanty cytoplasm staining a clear pale blue is more commonly found, although a cell may be moderately basophilic. Only rarely is a larger or intermediate lymphocyte seen.

Persistent eosinophilia was first noted by Finucaine. Actually, during the initial phase of leukocytosis (as high as 147,000 per cu. mm. has been reported), the eosinophil count is low or absent. As the white blood cell count starts to taper, the eosinophils may be expected to rise.

Nucleated red blood cells were first reported by Barnes. This finding was not observed in the authors' cases.

The majority of the cases reported have been devoid of positive findings. Absence of lymphadenopathy and splenomegaly has been rather characteristic. From epidemic reports, it has become apparent that some cases do present themselves with signs and symptoms of respiratory infection and gastrointestinal distress, the latter most commonly manifested as diarrhea. Skin involvement, in the form of a mild morbilliform rash, has been reported in a young adult by Duncan. Another report of a maculopapular rash in a young adult has been noted. More recently, Howard reported a case in Chile, in which the child had associated lesions of erythema multiforme.

Of further clinical import has been the appearance of an acute abdominal condition in this disease. Duncan reported a 5-year-old child with acute abdominal pain having a white blood cell count of 45,000 per cu. mm. The pain may be explained on the basis of hyperplasia of the mesenteric lymph nodes.

A detailed and complete discussion of the differential diagnosis has been adequately presented by Smith and is not reviewed. Briefly, however, there are three diseases which may give rise to an absolute lymphocytosis. They are: pertussis, infectious mononucleosis, and lymphatic leukemia.

The diagnosis of acute infectious lymphocytosis should not be mistaken if its usual paucity of clinical signs and symptoms and its lack of positive findings are remembered. It is true that there are reported exceptions with gastrointestinal and central nervous system symptomatology. However, clinical apparisal, bacteriological examination, serum antibody studies, and a careful routine hematological work-up (including bone marrow studies) will help to differentiate these diseases. (Am. J. Dis. Child., July 1954, Capt. H. E. Scalettar USAF (MC), J. E. Maisel, M. D., and M. Bramson, M. D.; Kings County Hospital, Brooklyn, N. Y.)

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Postural Drainage for Bronchiectasis

In interviews with bronchiectatic patients it was found that the usual method prescribed by physicians for postural drainage was lying over the edge of the bed in the morning with a member of the family helping to hold the patient in bed. This method has not met with success because it results in extreme dyspnea; also, it requires an assistant. The method of hanging over a chair also results in extreme dyspnea and fatigue and is impossible for some patients due to the insecurity encountered in such a position.

The author has found that the methods, which appear to be most frequently recommended for bronchiectatic patients, are abandoned after a few attempts because they are exhausting, result in headaches, produce dyspnea, palpitation, flushing of the face, and inadequate drainage of pulmonary secretions. Patients undergoing such exercises expend much effort in supporting themselves and thus do not concentrate upon ridding themselves of the pulmonary secretions. Elderly patients in particular, who have chronic bronchiectasis, find it difficult to assume and continue in these types of pulmonary drainage.

The bronchiectatic patients treated by postural drainage in this series were those who were found to have moderate to extensive disease, usually on both sides, who were not surgical candidates. These patients may be treated by antibiotic therapy and all other helpful measures, bearing in mind that pulmonary postural drainage is of the greatest aid in evacuating the bronchiectatic cavities. It is apparent that these patients will follow the advice of a physician who prescribes the most simplified methods of pulmonary postural drainage.

Four simple methods of pulmonary postural drainage for bronchiectasis are outlined. The knee-chest position has been found to be the most successful for it removes a large portion of secretions whenever used. The elbow-to-knee position with and without the aid of a chair, being simple, supplements the knee-chest for it can be used at any time or place. The crouching position has been helpful in arthritic and elderly patients.

Experience has proved over a period of 5 years that patients become expert in these procedures for they are well tolerated, do not require props, assistance, or expense.

Helpful aids in individual education are outlined.

These 4 exercises were found to be practicable for bronchiectasis as well as other pulmonary diseases requiring drainage, such as tuberculous basal cavities, purulent tracheobronchitis, lung abscess in the lower lobes, bronchial asthma (depending on the severity of dyspnea), asthma complicated by bronchiectasis, and pulmonary emphysema. The exercises were also helpful before bronchographic study and surgical procedures requiring pulmonary drainage. (Dis. Chest, July 1954, 112 East Chestnut St., Chicago, 11, Ill., J.G. Russo, M.D.)

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Pneumomediastinum

Roentgen examination of the mediastinum after the introduction of air is a procedure which, in the author's opinion, represents decisive progress in the diagnosis of mediastinal pathologic conditions. Six cases are presented in which the method greatly facilitated arrival at the correct diagnosis.

Pneumomediastinum can be performed either by an anterior or a posterior route. Whichever route is followed, experience has proved that the air passes from the anterior to the posterior portion of the mediastinum and vice versa. The air is diffused freely in all these spaces, through the loose cellular retrofascial tissue of the neck, the retromediastinal tissue of the thorax, and the retroperitoneal tissue of the abdomen and pelvis, provided it is introduced in sufficient quantity and under a certain amount of pressure. It has also been proved that if a certain region is to be studied with pneumomediastinum, the air will give a better contrast if introduced near the region to be studied. It then follows that if the anterior portion of the mediastinum is to be studied, the anterior route, with the needle inserted just above the sternum, is preferable. In order to study the structures of the posterior portion of the mediastinum the posterior paravertebral route is to be preferred, the needle being inserted at the level of the eighth thoracic vertebra.

The amount of air to be introduced varies from 800 to 1,000 cc., if first the posterior and then the anterior portion of the mediastinum and the diaphragm and all organs of the abdomen (liver, spleen, and kidneys) are to be studied. Posterior pneumomediastinum obtained by the paravertebral route has never, in the author's experience, caused complications. It is well tolerated by the patient, who complains only of a moderate respiratory oppression that disappears after 6 to 12 hours. The danger of secondary infection is practically nonexistent if the common rules of asepsis are strictly observed just as in the performance of thoracentesis.

Generally speaking, thoracic surgery and especially mediastinal surgery can be greatly aided by a diagnostic procedure that employs a contrast medium as harmless as air and by which morphologic studies of the anatomic structures of the mediastinum can easily be performed. (J. Internat. Coll. Surgeons, June 1954, 1516 Lake Shore Drive, Chicago 10, Ill.; G. Bendandi, Rome, Italy)

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Nutritional Anemia in Infancy

The basic etiological factor in hypochromic anemias is the depletion or inadequacy of the body's iron stores. Iron deficiency anemia develops

in a large number of young children. An infant's normal iron balance may be deranged by excessive demand for iron due to rapid growth, iron-deficient diet, defective iron absorption, deficient iron storage (faulty prenatal maternal diet, prematurity, twin birth, early clamping of umbilical cord), infections, hypochlorhydria, or gastrointestinal disorders (intestinal polyps, colitis, or celiac disease). Nutritional anemia is more common in children between the ages of 6 to 36 months than at any other age, because this age group is particularly vulnerable to the mentioned factors.

In 20 infants and children with severe nutritional anemia, satisfactory therapeutic results were obtained when oral iron was administered. Every other patient in this series received large doses of ascorbic acid additionally which improved the response to iron therapy.

The observations were critically analyzed and evaluated. The hemoglobin values were restored rapidly to a normal range in all cases. The average daily hemoglobin response in the group treated with oral iron alone was 0.205 gm. The average daily hemoglobin response in the group treated with oral iron and ascorbic acid amounted to 0.347 gm. The average length of treatment in the first group was 21 days, while the same was achieved after 17 days of therapy in the second group.

It is concluded that the oral administration of iron in nutritional anemia of infancy and childhood is equally efficacious as other types of treatment. Apparently ascorbic acid increases the absorption and, to some extent, may aid the utilization of orally given iron. (J. Pediat., July 1954, M. K. Gorten, M. D. and J. E. Bradley, M. D.; University of Maryland School of Medicine, Baltimore, Md.)

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Renal Complications From Aortography

Damage to the kidney from translumbar aortography has been observed in 7 patients in the last 2 years. During this time, approximately 250 aortograms have been taken on the combined University of California services, of which over 90% were made by the surgeons of the vascular disease group. The 7 known instances of renal complications thus represent an incidence of almost 3%.

This report is an analysis of cases of serious renal injury and of data from animal experiments, in an attempt to find the factors causing damage following aortography and the methods for avoiding injury.

These clinical and experimental results indicate that renal damage may be caused by high pressures combined with a volume of media sufficient to generate such pressure, or by irritation of the contrast media itself if the pressure-volume relationship produces a sufficiently high concentration. The damage appears to come either from mechanical damage to the renal blood vessels with extravasation or from excessively high concentrations of the dye as it passes through the kidney.

To insure against such damage following aortography, certain limitations in technique appear desirable. If the entire aortic tree must be filled (as before vascular surgery), then at least 50 cc. of dye is needed. To prevent excessive pressure (or the danger of trauma by too large a needle), it has been found advisable to use two smaller 17 or 18 gauge needles and inject by hand with two syringes. To avoid direct injection of the renal vessels (or other aortic branches, for that matter), the needle tips should be angulated sharply upward so that they enter the aorta just below the diaphragm and 2 to 3 cm. above the renal vessels. Long needles are required.

For urologic purposes, such large volumes of media are not needed, although the 12 cc. volume advocated by Parke Smith often has not been sufficient to show the renal vascular pattern. The authors found 25 cc. to be adequate. But this quantity of dye injected directly into the renal artery, even by hand pressure, could be damaging, so the authors advocate, especially for the occasional operator, the making of a scout film after injection of 5 cc. of dye to determine the position of the tip of the needle. It may then be moved should it lie within the lumen of the renal artery or mesenteric vessels, or should there be extravasation. This precaution might have obviated the complications in at least 3 of the reported cases.

These smaller volumes used to visualize just a segment of the aorta and the renal vascular tree can be conveniently injected under local anesthesia. The use of local anesthesia avoids some of the dangers inherent in general anesthesia, particularly when given away from the operating rooms, and avoids the need of an anesthetist and additional personnel. The patient is heavily premedicated with barbiturates and intravenous Demerol, and a single 17-gauge needle is inserted by local infiltration of 1% procaine. Once the aorta is entered, an additional 20 cc. of procaine is injected directly into the aorta to avoid vasospasm in the distal vessels. With 70% Diodrast there has occasionally been a sudden movement by the patient from the "shock" of the injection, but this was controlled with adhesive taping. Since using 70% Urokon, the authors have not seen this sudden movement.

The direct forceful injection of a sizable amount of dye into a single renal artery produced unilateral damage in 3 of these patients. The high pressure produced visible extravasation of an irritating medium.

Bilateral renal injury followed by reversible renal failure occurred in 4 other patients. Two of the 4 had evidence of Diodrast sensitivity; 3 of the 4 had at least 60 cc. of media injected, and the fourth had 50 cc. injected under high pressure.

Animal experiments showed that high injection pressures caused interstitial extravasation of the medium, leading to late renal fibrosis.

A safer plan for aortography is proposed, using lower pressures and smaller volumes. (Surgery, June 1954, G. M. Miller, M. D., E. J. Wylie, M. D., and F. Hinman, Jr., M. D.; University of California School of Medicine, San Francisco, Calif.)

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Tronothane

Tronothane is a new topical anesthetic isolated by Wright and Moore. Its structural formula differs from that of any other topical anesthetic. Tronothane is obviously not a "caine" derivative. The practical significance of this lies in the absence of cross sensitization in those individuals who have developed a sensitivity to other similar agents, especially the "caine" compounds. Furthermore, the toxicity and sensitizing indices of Tronothane are quite low per se. Thus, Tronothane provides a desirable combination of properties--low toxicity, low sensitization, and structural individuality, together with prompt and adequate anesthetic effect.

The pharmacologic properties of Tronothane have been thoroughly studied and reported by Schmidt, Blockus, and Richards. In addition, a study having considerable interest in the field of dermatology was carried out to determine the sensitizing capacity of this new topical agent.

Fields in which Tronothane has been studied include obstetrics and gynecology, proctology, urology, and anesthesiology. Reports have appeared verifying the effectiveness and usefulness of Tronothane as an analgesic agent. The present study concerns not the analgesic properties of Tronothane, but rather its antipruritic effects in a wide variety of conditions encountered in everyday dermatologic practice. In the cases reported, palliation of itching was the main objective, as an aid in determining the basic etiology involved and in preventing the itch-scratch-itch cycle. Several forms of Tronothane were utilized, all with satisfactory results, although the authors developed a preference for the cream vehicle as their experiences increased. The jelly and the lotion forms were also tried.

The 185 cases reported consisted almost equally of specific conditions, such as dermatitis herpetiformis, psoriasis, pruritus ani, pruritus vulvae, herpes zoster, et cetera, and of nonspecific dermatoses involving itching, such as eczematoid, factitial, stasis, atopic, and neural dermatitis. Results were equally satisfactory in each category; in fact, only 13 of the 185 cases were classed as having poor results. It was especially gratifying to notice the alleviation of symptoms in 4 very intractable cases of pruritus ani and vulvae.

The results add further to those of a previous report describing excellent results in palliation of itching encountered in dermatologic practice. In a recent article, White reported approximately similar experience in symptomatic treatment of chronic dermatoses of the upper extremities, contact dermatitis, senile dermatitis, "dry skin," and pruritus of the scalp. The experiences reported here, in conjunction with those of White, justify the conclusion that Tronothane is a valuable addition to the armamentarium available for palliation of itching occurring in a wide variety of dermatologic syndromes. Particular emphasis is placed on the absence of irritation or sensitization in this wide assortment of cases, and on the absence of cross

sensitivity in those patients previously sensitized to other topical anesthetic agents. (Postgraduate Medicine, July 1954, F. R. Schwartz; Stritch School of Medicine of Loyola University, Chicago, Ill.)

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Rehabilitation in Coronary Artery Disease

Rehabilitation of the patient with coronary artery disease is divided into three stages: the attack, convalescence, and return to work.

Bedrest has long been the sine qua non in the therapy of acute myocardial infarction. The physician usually recommends from 4 to 6 weeks' bedrest. Some authorities, however, have dissented in recent years, with a resultant swing of the pendulum toward early ambulation of the patient with acute myocardial infarction.

The authors' policy has been guided by the individuality of the patient's episode. The mild case with a small infarct, complete relief of pain after 1 or 2 injections of morphine, lack of shock, fever, failure, or arrhythmias, is usually kept in bed for a period of 2 weeks, and then allowed in a chair for a week before ambulation is permitted. Severer cases, with initial shock, failure, arrhythmias, et cetera are kept at bedrest for from 4 to 8 weeks. The fear of rupture, backed by the knowledge that necrosis is usually at a maximum in 10 days, and that most myocardial infarctions change continuously in extent for some time with involvement of new sites, has prevented the authors from carrying out early ambulation in most cases. Although the chair treatment is being used more and more because of data accumulated that this position yields a reduction in cardiac work, the greatest drawback to it is that the patient, once allowed in the chair, makes light of his disease, and soon is walking around the room or the ward and expending more energy than the chair treatment saved. Most patients are given anticoagulants in the authors' hospital, except those with obvious complications such as bleeding tendencies, history of bleeding ulcers, hepatic or renal disease, or azotemia. Knowledge is being disseminated among physicians to the point where the bedside commode is being used more often in acute infarcts because less energy is expended than in the use of a bedpan. The authors recommend the use of a commode routinely, except for the patient who is in shock or is too weak to sit upright.

Physical problems are usually the easiest to be treated, but in the scheme of rehabilitation the patient should be treated not only for his heart disease but also in relation to his life situation. The patient who is distraught during his coronary occlusion will continue to be so unless he can find a way out of his difficulties. The psychologic approach must begin as soon as the patient is over his acute episode.

After the patient is allowed to walk about he is discharged from the hospital, and remains at home perhaps another month or two before he is

sent back to work. This period of time depends upon the type of his employment. Too often, unfortunately, the patient is restricted too long.

Patients are allowed to climb stairs in a leisurely manner. For many reasons the authors do not encourage them to sell their homes, build ranch-style houses, or move to the ground level. In the first place, the authors' patients, as a rule, are not wealthy. Second, getting new apartments is difficult, but, more important, it has been shown by Mathers and his group that ascent of stairs does not greatly increase the work of the heart. In fact, in patients with compensated coronary disease, the cardiac work was not greater than after descent, and only slightly greater than walking an equal distance on level ground. Deliberate retardation, like hurry, may augment the work of the heart. If stairs were to be completely avoided, every patient would have to live on the ground floor, or have an elevator. This, of course, is not possible, so the answer to the patient is to walk stairs leisurely, within the limit of his angina or dyspnea, at a pace determined by himself.

That patients, following coronary occlusion, may return to work is substantiated by many workers. The studies of the Work Classification Unit of New York University revealed that 74% returned to full-time work, 14% to limited work, and that 12% stopped completely. Crain and his workers noted that approximately 79% resumed work after their first infarction, and he also pointed out that a high percentage of employees who did not have hypertension were able to resume work, and worked for longer periods of time than did those with hypertension. Some worked for as long as 18 years. If any fault is to be found in this study, it is that there are no data as to the type of work done. Many highly trained executives and departmental heads were included, and it is logical that they should have a better work capacity. Master in his series, which is less selective, noted that 53% returned to work. Levine and Phillips, in studying 84 shipyard workers with coronary occlusion, found that 73.4% returned to work, and that 43% were still working at the end of a year. From their study they also concluded that manual laborers, as well as sedentary workers, were able to resume their former employment. In the authors' series of approximately 200 cases (now under analysis) of myocardial infarction in all types of employment, about 75% were found to be re-employable. Several factors must be highlighted in reference to employment. In the authors' experience, heart failure, repeated infarction, increased angina, and cerebral vascular accidents are just as apt to occur in the employed as in the unemployed. This is the natural progress of the disease and average work should not be blamed for what is coincidence. (Ann. Int. Med., July 1954, 4200 Pine St., Philadelphia 4, Pa.; J.G. Kaufman, M.D. and M.C. Becker, M.D.)

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Intravenous Administration of Coconut Water

This article reviews the authors' clinical experience with the intravenous administration of coconut water in 157 patients and evaluates its clinical role as an intravenous solution for use in parts of the world where pyrogen-free solutions cannot be obtained.

Three methods were utilized for treating coconut water prior to its infusion intravenously. A group of 8 patients received coconut water autoclaved at 15 lb. pressure for 20 minutes prior to its administration. Another group of 71 patients received coconut water to which 100,000 units of penicillin G had been added. The final group of 78 patients received untreated coconut water as it was withdrawn from the fruit. The only precaution taken in the latter group was the removal of large particulate matter by filtration through a few layers of sterile surgical gauze.

The temperature, pulse, respiratory rate, and clinical appearance of all patients were followed during the infusion and for at least 24 hours thereafter.

The amount of coconut water employed in each infusion varied, but in all cases was in excess of 250 ml. Routinely the authors infused 500 ml. The maximum amount of intravenous coconut water given to a patient in 1 day was 2,365 ml. Eight patients received over 1,500 ml. within a 12-hour period.

It is apparent from the authors' experience as well as others that coconut water can be administered intravenously without frequent or serious evidence of toxicity. Fresh coconut water is sterile, so treatment of the fluid with penicillin or by heat sterilization prior to infusion is unnecessary.

There were 11 reactions in this series of infusions--a reaction rate of 7%. The reactions were transitory and of no serious clinical significance.

Intravenous readministration of coconut water to a series of 12 patients 5 to 6 weeks after the initial infusion produced no evidence of sensitization.

The clinical implications of the high concentrations of potassium and magnesium in coconut water are discussed. No evidence of toxicity ascribable to these cations was noted.

When coconut water is infused at a rapid rate, a majority of patients will complain of some discomfort along the course of the infused vein due to the high potassium content of the fluid. When the infusion is slowed, this discomfort disappears.

The data available at this time indicate that the diuretic action of coconut water given intravenously is so marked that actual dehydration follows its infusion.

On the basis of present evidence, the diuretic effect of this material makes it of no clinical value in improving depleted states of hydration of a patient. It can be used as a source of potassium, a source of calories, or

as a vehicle for the injection of sodium salts added to it for the emergency treatment of hypovolemia when other sterile pyrogen-free fluids are unavailable. (Arch. Surg., July 1954, AMA, 535 N. Dearborn St., Chicago 10, Ill.; B. Eiseman, M.D., R.E. Lozano, M.D., and T. Hager)

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Roentgen-ray Therapy of Cerebral Metastases

Although metastases to the brain are by no means uncommon in patients with various types of cancer, their treatment by irradiation is not widely known, and the palliative results of roentgen-ray therapy in an unselected series of cases have not been evaluated. The authors therefore present all the cases of brain metastases referred to them in the past 4-1/2 years. No case with demonstrable metastases in the bone of the cranium was included, because the differential diagnosis of neurological symptoms caused by the pressure of osseous metastases from those due to intracranial metastases is uncertain.

If brain metastases regularly produced unconsciousness, palliative treatment could hardly be justified; but in many of the authors' patients the sensorium was clear, and the relief of suffering owing to aphasia, incontinence, hemiplegia, and headache was beneficial both to the patient and to the relatives or attendants. Likewise if the duration of life after the onset of neurological symptoms was only a few weeks, palliative treatment might not be necessary; but because many months may elapse before death--the longest survival in this series was 30 months--it would seem advisable to offer roentgen-ray therapy as soon as the diagnosis of brain metastases is made.

In this unselected series of patients with metastatic brain tumors, roentgen-ray therapy was followed by symptomatic relief in 63%. This the authors regard as the minimum percentage improvement that can be expected because 22% of the cases had incomplete treatment with less than 2,000 r tumor dose. The authors feel justified in recommending palliative roentgen-ray therapy for brain metastases in all patients whose life expectancy is more than a few weeks for the following reasons: (1) the average duration of life in patients with brain metastases is not less than 4 months; (2) the effects of brain metastases--headache, vomiting, inability to communicate, paralysis, incontinence--are disabling and distressing and make the terminal care of the patient difficult and expensive; (3) the relief of these symptoms following roentgen-ray therapy usually lasts for 3 or 4 months at least or, not infrequently, until the death of the patient from the primary cancer or its metastases other than those in the brain; (4) if intracranial symptoms recur, further palliation may be expected from a second course of roentgen-ray therapy; (5) the type of cancer apparently has no significance in the probable response--symptoms from metastatic malignant

melanoma (a fair example of the so-called radioresistant group of tumors) may respond just as well as those from a "radiosensitive" lymphosarcoma; and (6) neither the degree nor the duration of relief of symptoms is at present predictable; for in some apparently hopeless cases there have been unexpectedly good results, and there are a few instances of relief lasting for more than a year.

The authors believe that radiotherapy is preferable to neurosurgery in most cases because of the likelihood of multiple intracranial metastases and of the frequency of active or residual cancer elsewhere than in the brain. Finally, taking 200,000 per annum as the number of cancer deaths in the United States, there are at least 2,000 and perhaps as many as 10,000 patients with brain metastases each year. The authors believe that roentgen-ray treatment of a larger proportion of these patients would not only mitigate suffering but also afford much-needed information on the optimum tumor dose for brain lesions and on the safe level of radiation dosage for cerebral functions. (Cancer, July 1954, J. Chao, M.D., R. Phillips, M.D., and J.J. Nickson, M.D.; Memorial Center for Cancer and Allied Diseases, New York, N.Y.)

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Selection of Hospital Corpsmen for Technical Training

During fiscal year 1954 it has been necessary to disenroll approximately 95 enlisted Hospital Corpsmen from the several medical technical training courses administered by the Bureau of Medicine and Surgery. The primary causative factor for this action was the student's lack of aptitude for the particular course he or she had requested. It is believed that careful screening of applicants for medical technical training by Medical Department officers can greatly decrease the number of inaptitude cases.

As medical technical specialties are closely allied to medical diagnosis and patient care, it is mandatory that only personnel of the highest caliber and who possess requisite qualifications and aptitude be selected.

Commanding Officers and Senior Medical Officers of the medical activities are requested to bring this information to the attention of all Medical Department officers under their cognizance. (ProfDiv, BuMed)

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Navy Medical Exhibits Win A. M. A. Awards

The Committee on Scientific Exhibits, American Medical Association, recently presented awards to two Navy Medical Department exhibits shown at the 103rd Annual Meeting of the American Medical Association in San Francisco, 21-25 June 1954.

The Billings bronze medal, awarded for excellence of scientific material and presentation, was presented for the exhibit, "Naval Medical Service With the First Marine Division in Korea." By means of color transparencies and art work, this exhibit pictures the many refinements in the care of casualties which stabilized warfare made possible in front-line areas in Korea. Surgical procedures such as open flap amputations and implantation of arterial homografts by naval medical personnel are depicted. Evacuation of casualties by helicopter, general combat surgery, neuropsychiatric therapy, and humanitarian treatment of South Korean civilian casualties are also presented.

A Certificate of Merit in the Section on Physical Medicine and Rehabilitation was presented for the exhibit, "Amputee Rehabilitation--New Developments and Research in Artificial Limbs." This exhibit consists of charts, posters, photographs, art work, and prosthetic devices designed and manufactured in the Artificial Limb Department, Naval Amputee Center, Naval Hospital, Oakland, Calif., headed by Capt. T. J. Canty (MC) USN. As a part of the exhibit, live amputees demonstrated the degree of physical rehabilitation which can be achieved through the use of the various prosthetic devices shown.

The American Medical Association's Billings bronze medal and Certificate of Merit were accepted by the Bureau of Medicine and Surgery, and letters of appreciation from the Surgeon General of the Navy were forwarded to the following naval medical officers: CDR W. W. Ayres (MC) USN, Naval Hospital, Yokosuka, Japan; CDR R. N. Grant (MC) USN, Naval Hospital, St. Albans, N. Y.; and LCDR G. C. Beattie (MC) USN, Naval Hospital, Philadelphia, Pa., in recognition of their work presented in the exhibit, "Naval Medical Service With the First Marine Division in Korea"; CAPT T. J. Canty (MC) USN, for his part in depicting the work of the Naval Amputee Center in the "Amputee Rehabilitation" exhibit; and to CAPT R. V. Schultz (MC) USN, Head of the Audio-Visual Training Branch, Bureau of Medicine and Surgery, for the outstanding manner in which the Navy's medical exhibits were prepared and presented. (TIO, BuMed)

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From the Note Book

1. On 12 July 1954, Vice Admiral C. J. Brown (MC) USN, Ret., was appointed Medical Consultant to the Department of the Youth Authority, State of California, with headquarters at 401 State Office Building No. 1, Sacramento 14, Calif. (TIO, BuMed)

2. Rear Admiral B. W. Hogan (MC) USN, Deputy and Assistant Chief of the Navy's Bureau of Medicine and Surgery left Washington on 1 Aug 1954 for the purpose of visiting naval medical installations in the British West Indies, Puerto Rico, Cuba, and Canal Zone. Admiral Hogan was accompanied by LT H. E. Sinclair (MSC) USN, his Executive Assistant. (TIO, BuMed)

3. LT V. E. Jones (NC) USN was the Navy escort for French Army Nurse Genevieve de Galard-Terraube, "Angel of Dien Bien Phu," during the latter's visit to the United States. (TIO, BuMed)

4. Naval medical installations throughout the world will commemorate three anniversaries in the history of the Medical Department of the Navy during the month of August: the 112th anniversary of the establishment of the Bureau of Medicine and Surgery, one of the five original Bureaus of the Navy Department, on August 31; the 42nd anniversary of the Navy's Dental Corps, on August 22; and the 7th anniversary of the Medical Department's youngest corps, the Medical Service Corps, on August 4. (TIO, BuMed)

5. The Office of Defense Mobilization has issued to hospital administrators a handbook entitled, "Mobilizing Your Personnel Resources for Better Patient Care", the first of a series describing ways to increase the productivity of hospital personnel. The series is designed to assist in meeting the added strain upon an already short supply of health personnel that may be caused by a defense emergency. (ODM)

6. Significant information on the cutting action of rotating dental instruments has been provided by a photographic technique recently developed at the National Bureau of Standards. In this technique, a high-speed motion picture camera is used in combination with an optical magnification system to make a greatly enlarged, slow-motion record of the action of each blade of a dental bur throughout the cutting cycle. It has thus been possible to obtain dynamic observations of clogging, intermittent cutting, eccentric rotation, and other hitherto unsuspected details of the passage of the bur blades through the tooth structure. (NBS, Summary Technical Report 1873)

7. Functional mouth protectors for contact sports are described in the Journal of the American Dental Association, July 1954, G. Watts, D. D. S., A. Woolard, D. D. S., and C. E. Singer, D. D. S.

8. The Federal Civil Defense Administration is attempting to interest states and cities in stockpiling a new type of 200-bed transportable hospital for use in atomic bombing or other high-casualty emergency. The $26,435 unit was recently displayed in Washington, D. C. (The Modern Hospital, June 1954, "Wire from Washington")

9. The management of problems relating to poliomyelitis is difficult and involves not only good patient care but also proper handling of community and parental problems that arise. The complexities of the disease, with its associated human interest and emotional reaction, has often contributed to the difficulty of organizing sound medical programs. (GP, July 1954, R. Batson, M. D.)

10. It has been found that persons with bulbar poliomyelitis give a history of removal of the tonsils more frequently than do persons with other forms of poliomyelitis and that, if clinically recognizable poliomyelitis develops in a person who has had his tonsils removed, the likelihood of bulbar involvement is 4 times as great as in one whose tonsils are in situ. (J. A. M. A., July 24, 1954, G. W. Anderson, M. D. and J. L. Rondeau, A. B.)

11. The clinical findings in 15 children who ingested red furniture polish are presented. The polish is composed principally of a petroleum hydrocarbon known as mineral seal oil. The patients all developed pneumonitis. (J. Pediat., July 1954, J. W. Griffin, M. D., C. W. Daeschner, M. D., V. P. Collins, M. D., and W. L. Eaton, M. D.)

12. A large group of antihypertensive drugs with diverse actions is described. Any one of these may prove useful in a variety of types of hypertension. Many of them used in combination seem to exert a synergistic effect. (Am. J. Med., July 1954, H. D. Green, M. D.)

13. A review of 20 years' experience in the treatment of tumors of the major salivary glands appears in Cancer for July 1954 by E. L. Frazell.

14. Pitfalls, precautions, and complications in cardiac resuscitation are discussed in Archives of Surgery for July 1954 by H. E. Stephenson, Jr., M. D., L. C. Reid, M. D., and J. W. Hinton, M. D.

15. Two hundred and twenty cases of painless myocardial infarction are reviewed in Annals of Internal Medicine for July 1954 by M. D. Roseman.

16. An article describing post-mortem technique for the occasional performer appears in the British Medical Journal for July 3, 1954 by T. V. Cooper, M. B., B. S.

BUMED INSTRUCTION 6320.16 19 Jul 1954

From: Chief, Bureau of Medicine and Surgery
To: U.S. Naval Dispensaries
All Continental Stations Having Infirmaries and Dispensaries

Subj: Staffing Report, NavMed-1357 (Report Symbol MED 6320-7)

This instruction requires information on staffing as it is related to workload. The information is required for budgetary and administrative uses by the Bureau and other components of the Department of Defense. BuMed Instruction 6320.13 is cancelled.

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BUMED INSTRUCTION 4220.3 21 Jul 1954

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Medical/Dental Personnel Regularly Assigned

Subj: Distribution of Invoices (NavSandA Form 127), covering medical and dental stores

Ref: (a) BuSandAMan, Para 26006
(b) BuSandAMan, Para 26079

This instruction advises all activities of the distribution of invoices (Nav SandA 127) concerning medical and dental stores.

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BUMED NOTICE 6600 21 Jul 1954

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Dental Personnel Regularly Assigned

Subj: Dental Service Report (Forms DD-477, 477a, and 477-1); disposal of

Ref: (a) Art. 23-303, ManMedDept

This notice advises of changes in disposal of Dental Service Reports (Forms DD-477, 477a, and 477-1).

* * * * * *

Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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The printing of this publication has been approved by the Director of the Bureau of the Budget, June 23, 1952.

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PREVENTIVE MEDICINE SECTION

Industrial Medicine

Notes Pertaining to Industrial Medicine

Sick leave. --A good occupational health program should have as one of its major objectives the reduction in absenteeism due to personal illness. Data collected during recent industrial health surveys at naval establishments on the West Coast showed that there was an average of 6.8 days per year per man used for sick leave (average of 23 stations), with a range of 2.5 to 8.8. On the basis of the most recent reports available it appears that in the United States each worker loses an average of 7.5 work days a year through temporary total nonoccupational disability, e. g., disability lasting not more than 6 months. The experience at naval establishments shows a lower sick leave rate than that of the country as a whole and it is believed that the Navy's occupational health program is, in a large measure, responsible for the attainment of this desirable position. The proximity of naval medical facilities to industrial activities makes immediate treatment and consultation available for even minor occupational injuries and medical conditions and thus tends to keep more men on the

job; the rendering of limited nonoccupational treatment in accordance with Public Law 658 serves also to keep the employee at work and in addition helps to single out patients who need more extensive medical treatment through their own private physicians.

Length of stay in the dispensary. --Interesting data was also collected at 12 stations as to length of time a civilian spends in the dispensary.

Time	Average %	Range %
0 - 15 min.	44	8 - 81
16 - 30 "	28	13 - 55
31 - 60 "	16	1 - 38
1 - 2 hrs.	11	0 - 31
over 2 hrs.	1	0 - 6

Using the average for these stations it would seem that 72% of all patients entering the dispensaries receive care within 30 minutes; 88% are cleared within an hour. These intervals in no way reflect the total time a man is away from his job; for to obtain a complete picture, it would be necessary to include the time spent by the man in seeking out his supervisor, filling out a Dispensary Permit (NavExos 107), traveling to and from the dispensary, and finally notifying his supervisor of his return.

Notes Pertaining to Industrial Hygiene

"Breathe and Live". --This BuMed film depicts several of the major inhalation hazards which may occur aboard ship and in industrial plants, and describes proper measures for the control of the toxic exposures described. "Breathe and Live" has been selected for exhibition at the International Film Festival at Edinburgh, Scotland. This film has been distributed to the various Training Film Libraries and may be procured on a loan basis as MN-7498a--Industrial Hygiene--"Breathe and Live."

List of occupational health hazards. --A compilation of occupational health hazards reported on NavMed 576 was released on 13 July 1954. This is intended as a quick reference to current problems, and as a lead to the solution of these problems. It is believed that interchange of information of this nature will be of assistance to all stations in their operation of a more effective occupational health program. Similar releases will be compiled quarterly.

Methyl Bromide and Chlorobromethane. --The industrial hygienist, Dispensary, Naval Air Station, San Diego, Calif., reports as follows:

Methyl bromide and chlorobromethane are currently replacing carbon dioxide in fire extinguishing systems aboard aircraft. Methyl bromide is a

highly toxic material of insidious action, and there is a definitely delayed action following exposure. Inhalation of excessive amounts causes narcotic effects and may lead to permanent damage of the nervous system. The recommended upper permissible limit for its vapors in air is 20 parts per million.

The following precautions are recommended when handling cylinders of methyl bromide (color of cylinders--brown):

(1) Gloves should not be worn. Accidental spills on the body through clothing or gloves lead to extremely painful burns. In the event of a spill, clothing should be washed with copious quantities of water. The injured individual should receive prompt medical attention. Contaminated clothing must be thoroughly cleaned before being worn again.

(2) Goggles should be worn to prevent splash into the eyes.

(3) Men entering areas in which spills have occurred should be required to wear approved respiratory equipment of either the self-contained oxygen type or the Rescue Breathing Apparatus type.

(4) If the operation involves filling of bottles, adequate local exhaust should be provided in order to keep the concentration in air below the upper permissible limit.

Although chlorobromethane is somewhat less toxic than methyl bromide, it is suggested that the same precautions be taken as outlined for methyl bromide.

General Sanitation

Training of Officer Personnel In Environmental Sanitation

Requests are desired from officers of the Hospital and Medical Service Corps who have had no specialized training in environmental sanitation under military sponsorship, but who desire to further their knowledge of this subject in order to become better prepared for such primary or collateral duty if so assigned. Ranks from Warrant Officer through Lieutenant junior grade are eligible. The Bureau is particularly anxious to receive requests from personnel due to rotate from sea duty.

Present planning includes training officer personnel at the regular course of instruction in environmental sanitation technic at the U. S. Naval Hospital, Oakland, Calif. The first class in which officers are to be included will convene on or about 15 Nov 1954. The course is of 22 weeks' duration. Personnel assigned for instruction receive permanent change of station orders and may expect assignment to duties in sanitation if possible after graduation. Those who show initiative and application in preventive medicine duties may be considered for further training at the University of California after a period of duty in the field of preventive medicine.

Preventing Rust on Tablespoons

Rough rusty silverware provides an excellent environment for the growth of bacteria. Mouth secretions and adherent particles of food provide the necessary food and moisture for growth and multiplication.

The following excerpt from the BuShips Journal, June 1954, is considered to be an excellent guide for remedying this condition:

"Information has been received from a number of field activities indicating that tablespoons, standard Navy stock number G63-C-8100, are rusting in use. These spoons were purchased under Federal Specification RR-T-41a, which is no longer applicable to the Navy's corrosion resisting steel tableware requirements. However, quantities of tablespoons purchased under this specification remain in store and are currently being issued.

"Although the rusting of tablespoons may be attributed to a variety of adverse conditions, examination of samples received from several activities show that these spoons are inferior from the standpoint of corrosion resistance. Nevertheless, by application of simple precautions, use of the spoons may be continued without resulting in loss.

"It has been determined that the effects of incomplete washing and moist storage are the direct causes of tablespoon corrosion. The complete removal of food and fatty residues in the washing process and fast (air) drying of the ware after washing will materially reduce the incidence of corrosion. The ability to resist corrosion may be improved by lightly buffing the spoons with a standard Navy buffing compound. Although buffing will create a better surface finish and increase resistance to corrosion, good washing and fast (air) drying are considered the best solution to the corrosion problem."

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Inspection of Food Service Facilities

There are many things for the sanitation officer or the environmental sanitation technician to remember when inspecting a food-service facility. The following 5 fundamentals for safe, sanitary food service, as outlined in the December 1953 issue of the Health Officers News Digest, constitute a useful guide for inspection planning:

1. Clean hands.--Dirty hands spread germs. Always wash hands and fingernails thoroughly with soap and water before work, after using toilet, and every time the hands are soiled.

2. Clean service.--Handling utensils the wrong way may spread disease. Paper container service should be handled carefully in order to keep

it sanitary. Other utensils should be washed clean, sanitized as recommended by the health department, and then handled and stored carefully.

3. Clean food. --Food may be infected by coughs, sneezes, handling, dirty equipment, vermin, animals, and wastes. It should be protected during storage, preparation, display, and service.

4. Right temperature. --Cold stops the growth of germs; heat kills them. Cold foods should be kept chilled; hot foods should be kept hot. Prepared food should never be left standing at room temperature unnecessarily, even for 1 minute.

5. Healthy workers. --Food workers must be healthy, for colds and other diseases may be passed to others. Germs from infected cuts, pimples, or boils may cause food poisoning.

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Destaining Compound

Stains on galley equipment are not considered to be as critical a problem as exposure of perishable foods in the dangerous temperature zone (50° to 140° F.) for a cumulative period of 4 hours or longer. However, it is desirable that these stains be removed in order to eliminate one more possible source of bacterial contamination.

A destaining compound for removing the stains of food, grease, coffee, tea, et cetera, is now carried in the General Stores Supply System under stock number GS 51-C-1568-2825. It is not toxic. Sanitation officers and environmental sanitation technicians at some activities have reported favorably on the use of this destaining compound.

Communicable Disease Control

Experimental Regeneration in The Spinal Cord

The main problem in regeneration of the central nervous system in adult mammals lies in the apparently limited capacity of the neuron itself to survive injury and subsequently to show vigorous and active growth. An integral part of this problem is the intimate relation between neurons and glia.

Striking evidence was noted of regeneration of nerve fibers in transected spinal cords and optic nerves of cats to which the bacterial polysaccharide, Pyromen, had been administered. Animals treated with this substance did not develop the massive blockade of scar tissue, and glial membrane was not found at the severed ends of the transected tissues. Growth of nerve fibers took place in a vascularized connective tissue framework which

blended almost imperceptibly into the parenchyma of the nervous system. (J. Internat. Coll. Surgeons., Feb. 1954, W. W. Chambers, Ph. D.)

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The Importance of Vaccination Against Smallpox

Today it is difficult for us to realize that smallpox was once as common a disease as measles, and much more fatal. Of those who recovered, many were disfigured for life, left blind, or left with some other serious consequence of the disease. Smallpox was formerly a disease of children, but vaccination has delayed the age incidence. The disease is still a problem to which public health authorities must be alert in all parts of the world. Few of the acute infections show such a complete independence of conditions such as race, climate, soil, age, sex, occupation, and sanitary surroundings as does smallpox. It thrives wherever the contagion is carried and wherever it finds susceptible people. The susceptibility of a population is determined by its previous experience with either the mild or severe form of the disease and its history of vaccination. Attention is invited to the Manual of the Medical Department, Chapter 22, Section VIII, paragraph 22, which contains the requirements for vaccination in the naval service, vaccination technique, important preservation data, and a standardized interpretation of results.

A primary reaction to vaccine virus may be exhibited in persons who have had smallpox after a lapse of time, and second attacks of smallpox may occur in the same individual. Also it should be remembered that the existence and size of an old vaccination scar bear no direct relation to immunity. When repeated attempts to vaccinate a person fail, it is false to believe that the person is immune. The most common cause of failure is impotent virus.

In 1806 when Jefferson was writing to Jenner he said: "Future nations will know by history only that the loathsome smallpox has existed and by you has been extirpated." This prophecy, of course, has not been completely fulfilled; from 1900 to 1905, 8,048 deaths from smallpox were reported in the United States and from 1945 to 1950, only 42 deaths. However, great strides have been made by diligent vaccinators who had the interest and took the time to read the reactions carefully, and to revaccinate and revaccinate when indicated. For centuries a Chinese mother would not number among her children those who had not yet had smallpox, because she well knew how uncertain would be their stay in the family. To the work of Jenner and a dairy maid we owe our great advantage over the Chinese mother, and failure to vaccinate properly can put us back into those dark ages when survival from the disease was the only immunity.

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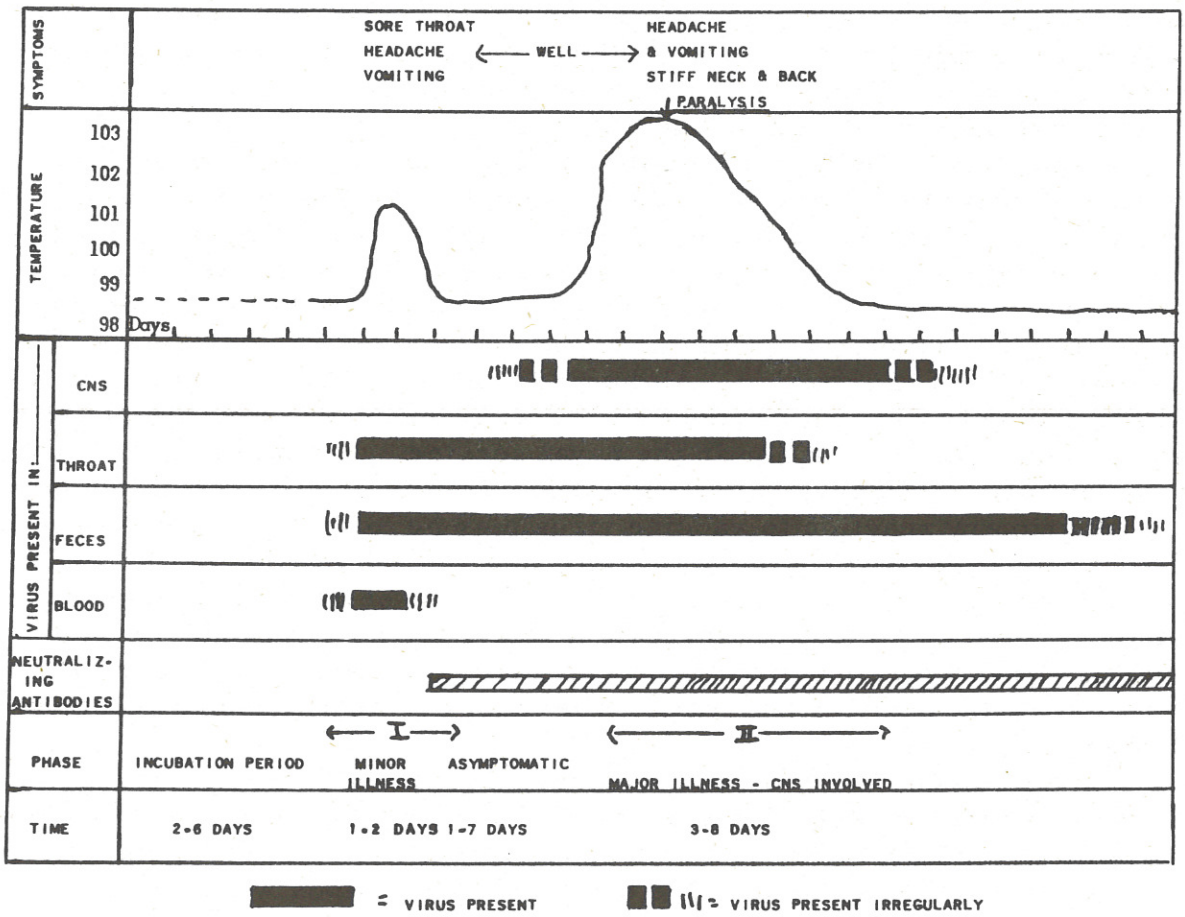
SCHEMATIC DIAGRAM RELATING THE PRESENCE OF VIRUS IN VARIOUS ANATOMIC SITES

TO THE SYMPTOMS IN A BIPHASIC CASE OF POLIOMYELITIS



VIREMIA IN HUMAN POLIOMYELITIS - By Dorothy M. Horstmann, M.D., Robert W. McCollum, M.D., and Anne D. Mascola. The Journal of Experimental Medicine, Vol. 99, No. 4, April 1, 1954

Reproduced from the WEEKLY REPORT of the Illinois Department of Public Health

Training and Visual Aids

Manual for Disaster Feeding Training Program

"Emergency Mass Feeding--Instructor Course," a manual for use in the Joint Army-Federal Civil Defense Administration Training Program on Improvisation in Emergency Feeding, is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

The manual's lesson plans, teaching notes, and diagrams were developed for use in Civil Defense Regions as a guide for one-time training programs in emergency mass feeding under disaster conditions. Representatives of more than 29 national organizations and Government agencies joined in pilot testing the training described. The testing took place at the U. S. Army Quartermaster School, Fort Lee, Va., 4-6 Mar 1953. The objective of the regional training program is to orient key personnel in subjects related to disaster feeding.

The course content is considered to be the minimum essential information necessary to meet the requirements of a disaster situation. Particular attention is called to the subjects of water purification, personal hygiene, sanitation, and food poisoning, as the rules pertaining to these are the ones most susceptible to violation.

A 38-page appendix with illustrations concerning equipment improvised from scrap material is included.

Tuberculosis Control

A Report of the Joint Committee on Mass Chest X-ray

On 4 February 1953 the Joint Committee on Chest X-ray of the American College of Radiology and the American College of Chest Physicians proposed guiding principles on the problems involved in routine chest x-rays in hospitals, and mass chest x-ray programs. The report was published in full in Diseases of the Chest for May 1953.

The report stressed the principles of mass roentgenographic examination of the chest. All relevant principles are incorporated in the Navy's tuberculosis control program. Among these are: (1) Re-examination on 14- by 17-inch films as the second step in the screening procedure. (2) Utilization of well-qualified professional and technical personnel for making and interpreting the examinations. (3) Interpretation and reporting of medical findings to bear the signature of the responsible physician. (4) Discouragement of reporting of suspicious cases as cases of tuberculosis; diagnoses to be established only after careful clinical study. (5) Reading of films by two interpreters (in the Navy the second reading is accomplished in the Bureau of

Medicine and Surgery). (6) Continuous monitoring of radiation received by all professional, technical, and clinical personnel associated with photofluorographic equipment by means of film badges or other devices.

The Committee stated that when an individual receives more than 100 milliroentgens per week the medical officer in charge of the unit should immediately determine whether the individual has been careless or whether the protective devices are at fault. The 100-milliroentgen level is 1/3 of the standard maximum of 300 milliroentgens per week. Although 300 milliroentgens is the standard limit in routine x-ray and photofluorographic work, it is well to investigate when the 100-milliroentgen level is exceeded. There may be a fault in technique or in safety devices which possibly could lead to an excessive dose of radiation well beyond the 300-milliroentgen limit.

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DEPARTMENT OF THE NAVY
BUREAU OF MEDICINE AND SURGERY
WASHINGTON 25, D. C.

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